

## II. REMARKS

The Office Action dated April 27, 2006 has been received and carefully noted. The amendment made herein and the following remarks are submitted as a full and complete response thereto.

Claims 1-5 are pending in this application. At this time, claim 1 is amended. Support for the amendment can be found in the specification and claims as originally filed. For example, support can be found in the specification on page 1, line 7. Therefore, Applicants believe that no new matter is added. Applicants respectfully request reconsideration and withdrawal of all rejections.

Claims 1-5 have been rejected under 35 U.S.C. § 102(e) as being unpatentable over Randolph et al. (U.S. Patent RE 37,765). This rejection is traversed.

Applicants submit that Randolph et al. does not teach or suggest a composition comprising “a carbon black supporting a hydrogen reduction catalyst” (claim 1) (emphasis added). Unlike the present invention, Applicants submit that Randolph et al. is directed to improving the plating properties of a printed wiring board.

Applicants respectfully disagree with the Examiner’s assertion that “Randolph et al. describes a coating with glass fibers made of... palladium/tin activators (Applicant’s catalyst...)...” (Office Action, page 2, lines 18-19) (emphasis added). In contrast, Randolph et al. merely discloses:

Conventional electroless processes have several commercial disadvantages... The conventionally used palladium/tin activator also may require expensive waste treatment.

(Randolph et al., col. 1, lines 29-35) (emphasis added). Applicants submit that Randolph et al. discloses the palladium/tin activator in the context of differentiating the claimed process from other processes in the field. The palladium/tin activator is not described as being supported by a carbon black. In other words, Applicants submit that Randolph et al. does not teach the composition of the presently claimed invention. Applicants also note that it has been well known, even before Randolph et al., that palladium/tin can be used as an active material in plating.

Moreover, Applicants submit that Randolph et al. does not disclose a composition with “a carbon black supporting a hydrogen reduction catalyst, [and]... an electrolyte” (claim 1) (emphasis added). In particular, Applicants respectfully disagree with the Examiner’s assertion that “Randolph et al. describes a coating with glass fibers made of... polyethylene or polychlorotrifluoroethylene” (Office Action, page 2, lines 18-20) (emphasis added).

In contrast, Randolph et al. discloses polyethylene and polychlorotrifluoroethylene as “suitable thermoplastic resins” in the layer of nonconducting materials of printed wiring boards (Randolph et al., col. 5, line 47 to col. 6, line 5). Randolph et al. discloses that “one preferred embodiment of the present invention is preparing the through hole walls of a printed wiring board... [by] placing a selected liquid carbon black dispersion followed by placing a selected liquid conductive graphite dispersion over the non-conductive portions of the through hole walls before electroplating” (Randolph et al., col. 5, lines 38-46) (emphasis added).

Applicants submit that the polyethylene and polychlorotrifluoroethylene of

Randolph et al. are part of the printed wiring board which is treated with a liquid carbon black dispersion. Further, Applicants submit that Randolph et al. does not disclose that the polymers are used as proton conductive electrolytes. As such, Applicants submit that Randolph et al. does not teach the "carbon black supporting a hydrogen reduction catalyst" composition of the presently claimed invention.

For at least the above reasons, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1-5 under 35 U.S.C. § 102(e) over Randolph et al.

Claims 1-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kovalev et al. (U.S. Patent No. 6,652,440) in view of Yamamoto et al. (U.S. Publication No. 2001/0041282). This rejection is traversed.

The presently claimed invention discloses "[a] paste composition for making electrodes, comprising a carbon black supporting a hydrogen reduction catalyst, an electrolyte, an organic solvent with a boiling point of 100 to 200°C, and a water-soluble organic solvent with a boiling point of less than 100°C" (claim 1) (emphasis added).

Applicants disagree with the Examiner's assertion that "[i]t is inherent that cyclic ether[s] have intrinsic properties of a boiling point of 100 to 200°C and a solubility parameter of 7.5 to 13 (cal/mol)<sup>1/2</sup>" (Office Action, page 3, lines 17-18). Rather, Applicants submit that Kovalev et al. discloses cyclic ethers, such as tetrahydrofuran, which do not have a boiling point of 100 to 200°C (Kovalev et al., col. 16, lines 3). Tetrahydrofuran has a boiling point of 66°C, which is outside the 100 to 200°C boiling point range of claim 1. Therefore, Applicants submit that

Kovalev et al. does not necessarily disclose the organic solvent with a boiling point of 100 to 200°C of the present invention merely because a cyclic ether is disclosed.

Further, Applicants submit that Kovalev et al. does not teach or suggest a hydrogen reduction catalyst, much less one supported by a carbon black (claim 1). Applicants submit that Kovalev et al. does not teach or suggest the composition of the present invention with “carbon black supporting a hydrogen reduction catalyst” and the other claimed elements. In contrast, Applicants note that Kovalev et al. discloses methanol and carbon fibers in the context of preparing a composite cathode, and electrolyte salts and cyclic ethers in the context of preparing an electrochemical cell. For example, Kovalev et al. discloses a “method of preparing a composite cathode” which includes the steps of: (a) dispersing or suspending in a liquid medium the electroactive polymer, as described herein; [and] (b) optionally adding to the mixture of step (a) a conductive filler...” (Kovalev et al., col. 15, lines 48-57) (emphasis added). Additionally, Applicants submit that Kovalev et al. discloses “methods of forming an electrochemical cell, the methods comprising the steps of: (a) providing an anode; (b) providing the composite cathode of the present invention, as described herein; and (c) interposing an electrolyte between the anode and the cathode” (Kovalev et al., col. 16, lines 58-63). Applicants respectfully submit that the mere identification of the elements of the claim is not sufficient to negate patentability.

Applicants respectfully submit that Yamamoto et al. does not satisfy the deficiencies of Kovalev et al. Applicants submit that Yamamoto et al. merely discloses fuel cell with a diffusion layer and a production method thereof. Applicants

submit that Yamamoto et al. does not teach or suggest the electrode paste or a method of producing the electrode paste. Applicants submit that there is no teaching or suggestion to combine Kovalev et al. with Yamamoto et al. to achieve the present invention. However, even if these references were combined, they would not render the presently claimed invention obvious, as neither reference teaches an organic solvent with a boiling point of 100 to 200°C or the carbon black supporting a hydrogen reduction catalyst.

For example, Yamamoto et al. does not teach or suggest a “carbon material” and a “catalyst” in the same layer within a fuel electrode. In contrast, Yamamoto et al. discloses a “fuel-reactive layer... [that] contains a catalyst that promotes hydrogen oxidation, and can oxidize the hydrogen, or fuel” (Yamamoto et al., page 4, paragraph 0078) (emphasis added). Additionally, Yamamoto et al. discloses that “[t]he fuel-diffusion-layer core portion is composed of... a porous carbon material...” (Yamamoto et al., page 3, paragraph 0063) (emphasis added). In other words, Yamamoto et al. also does not teach or suggest “a carbon black supporting a hydrogen reduction catalyst” (claim 1).

As neither references teach or suggest all of the elements of the presently claimed invention, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1-5 under 35 U.S.C. § 103(a) over Kovalev et al. in view of Yamamoto et al.

### III. CONCLUSION

Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

In the event this response is not timely filed, Applicants hereby petition for an appropriate extension of time. The fee for this extension, along with any other additional fees which may be required with respect to this response, may be charged to Deposit Account No. 01-2300, referencing Attorney Docket No. 026035-00009.

Respectfully submitted,

ARENT FOX PLLC



Charles M. Marmelstein  
Reg. No.: 25,895

Customer No. 004372  
ARENT FOX, PLLC  
1050 Connecticut Avenue, N.W., Suite 400  
Washington, D.C. 20036-5339  
Tel: (202) 857-6000  
Fax: (202) 857-6395

CMM/YYK:yyk